October 2013

# A Teaching Practicum in Secondary Education Mathematics

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# A Teaching Practicum in Secondary Education Mathematics

*An Interdisciplinary Qualifying Project*
*Submitted to the faculty of*
*Worcester Polytechnic Institute in*
*partial fulfillment of the requirements for the*
*Degree of Bachelor of Science*

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**Date: October 27, 2013**

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*A Special Thank You to Professor John Goulet and*

*Ms. Renah Razzaq*

*Your Mentorship and Guidance will always be*

*remembered in my teaching career.*

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# Abstract

This paper highlights the experience of a student teacher experience in Doherty Memorial High School in Worcester, Massachusetts. This practicum serves to purposes: to fulfill the degree requirements of Worcester Polytechnic Institute for the Interactive Qualifying Project and to fulfill the Massachusetts Department of Education teacher licensing requirements.

This paper discusses the demographics of Doherty Memorial High School and how it compares to other learning institutions on the state, national and global levels. It later discusses how the student met each of the Department of Educations five professional standards for teaching. The teaching practicum experience is then discussed in specific detail. Finally attached in the appendices are references of lesson plans, classroom materials and assessments.

# Chapter 1: Background and Demographics

## Introduction

The purpose of this chapter is to give the reader background information on how Doherty Memorial High School (Doherty) relates to the general context of the Massachusetts Educational Reform Act of 1993 (Mass Ed Reform Act), and how it compares on city-wide, state, national and international levels. Also explored are the specifics of Doherty's demographics with regards to the classes that participated in this practicum.

## Massachusetts Education Reform Act of 1993

The state of Massachusetts passed landmark legislation in the year of 1993 that's purpose was to modernize the state's educational system, standards and processes. It is known as outcomes based education reform, which is centered on assessing the outcomes of a student imperially through some sort of standardized testing.

In the case of Massachusetts, the Massachusetts Comprehensive Assessment System (MCAS) was created. This test, based off of the standards set by the Mass Ed Reform Act has 3 primary purposes (Massachusetts Education Reform).

1. To inform and improve curriculum and instruction.
2. To evaluate student, school, and district performance according to Massachusetts Curriculum Framework content standards and Performance Standards.
3. To determine student eligibility for the Competency Determination requirement in order to award high school diplomas.

The reform act implemented standards for all grade levels Kindergarten though 12th grade. These standards all reflect standards set up by the Common Core, which is the heart of the reform act. The philosophy of a common core is to establish a well-defined system that is to be the standard across the entire Commonwealth.

The common core is depicted by very specific frameworks, which are written specifically for individual courses and subjects. Teachers are expected to teach to these frameworks, as they will be specifically assessed by the MCAS. While this certainly has its pros and cons, it does at the end of the day ensure that everyone is studying and assessing the same material.

Ideally the state would then be able to look at all of the schools' data holistically and find what schools are falling through the cracks. With this academic data coupled with state census data such as socio-economic class information, the state is able to then make necessary changes to improve the overall quality of education. Likewise, for schools that are improving above the expected norm, professional educators can then try and replicate specific schools best practices at other lacking institutions.

The Mass Ed Reform act proved is essential for the shape of the state's education today and has perhaps set it ahead from the rest of the country. It is important to recognize that when considering Massachusetts against the rest of the country that Massachusetts as a state has historically performed well above the national average.

## Massachusetts's performance relative to the International Community

The Trends in International Mathematics and Science Study (TIMSS) is an international assessment tool, which assesses students in math and science during 4th and 8th grade or international equivalent.

The last time this study was conducted was in 2011, United States came behind the top Asian countries with an average score of 509.

Scores and Attitudes of 8th Graders in TIMSS 2011

| Country | Math Scores | Confidence (%) (4th Grade) | Value Math (%) |
|---|---|---|---|
| Korea | 613 | 03 (11) | 14 |
| Singapore | 611 | 14 (21) | 43 |
| Chinese Taipei | 609 | 07 (20) | 13 |
| Hong Kong | 586 | 07 (24) | 26 |
| Japan | 570 | 02 (09) | 13 |
| United States | 509 | 24 (40) | 51 |
| England | 507 | 16 (33) | 48 |
| Australia | 505 | 17 (38) | 46 |

(TIMMS)

Massachusetts however, has an individual score of 561. While this does not necessarily change the ranking of the countries, it does say that Massachusetts is well above the national average. Many educators believe there is a strong correlation between poverty levels and performance on the TIMSS which may be the cause for large variance

in United sates data. It is important to note however, that the majority of US states did not participate in TIMSS.

With that said, the challenge that Massachusetts faces in the future of its education is to not only strive for its own improvement, but also to be a role model for the rest of the nation.

## Worcester Public Schools: Overview and History

Worcester is New England's second largest city and boasts a population of over 182,000 people. To handle this massive population the city is equipped with seven public high schools, which have about 23,000 students between Kindergarten and 12th grade. (American FactFinder) There are also about twenty private or religious institutions that teach students of varying grade levels.

The School Committee governs the city's public education system. The mayor chairs this committee of seven elected individuals. It is a legislative and policy making body that is tasked with supervising and maintaining all public education in the city.

Under Chapter 71 section 37 of Massachusetts General state law, these committee members "shall have the power to select and to terminate the superintendent, shall review and approve budgets for public education in the district and shall establish educational goals and policies for the schools in the district consistent with the requirements of law and statewide goals and standards established by the [Massachusetts] Board of Education." (Worcester School Committee Overview)

Aside from that the committee also is the collective bargaining team for all employee organizations that work in the school system which include a many union

negotiations. Other responsibilities include the appointment of senior administrators in various schools as well as the decision as to what textbook is used in what classroom.

## Doherty Memorial High School

Doherty, the school where this practicum took place, is located on 299 Highland Street, Worcester Massachusetts. The school has a student population of about 1300 and has been opened since 1966. It's opening came with the closing of two other public schools, Worcester Classical High School and Worcester Commerce High School both of which were too small to justify staying open. The school is geographically designated for students from the west side of Worcester, which includes Pleasant & Chandler Street, Tatnuck Square, Salisbury Street, Forest Grove, Newton Square, and June, Mill, Pleasant, and May Streets neighborhoods. (Doherty Memorial High School – Index) Due to state policy on school choice, there are a number of students who attend Doherty who do not live in the above areas. This applies not only to citizens of Worcester but also to other neighboring school districts as long as there is consent with the school committee.

Doherty is a very diverse school; no ethnic group has a majority over another. Below are the most recent tabulations of school diversity:

| **Enrollment by Race/Ethnicity (2012-13)** | | | |
|---|---|---|---|
| Race | % of School | % of District | % of State |
| African American | 14.0 | 14.2 | 8.6 |
| Asian | 9.7 | 8.1 | 5.9 |
| Hispanic | 29.5 | 38.1 | 16.4 |

| | | | |
|---|---|---|---|
| Native American | 0.7 | 0.3 | 0.2 |
| White | 43.7 | 35.8 | 66.0 |
| Native Hawaiian, Pacific Islander | 0.0 | 0.0 | 0.1 |
| Multi-Race, Non-Hispanic | 2.5 | 3.5 | 2.7 |

| **Enrollment by Gender (2012-13)** | | | |
|---|---|---|---|
| | School | District | State |
| Male | 664 | 12,824 | 489,289 |
| Female | 669 | 11,916 | 465,484 |
| Total | 1,333 | 24,740 | 954,773 |

**Enrollment by Grade (2012-13)**

| | 9 | 10 | 11 | 12 | SP | CT | Total |
|---|---|---|---|---|---|---|---|
| District | 1,829 | 1,753 | 1,532 | 1,580 | 0 | - | 24,740 |
| Doherty Memorial High | 381 | 336 | 295 | 321 | 0 | - | 1,333 |

Citation: (Massachusetts School and District Profiles.)

While these percentages are reflective of the ethnic build of Worcester, they differ greatly from the rest of the state's averages. On a whole, Massachusetts has about a 66% white student population and a 16 % Hispanic student population.

The school also has diversity in terms of socio-economic status. Most notably, the school offers a reduced or free lunch program. Depending on the number of people in a household and the family's total income, students can receive either free or reduced price lunches. In therms of studying economic class in high schools, this is the most blatant indicator. Surprisingly, almost half of the students who attend Doherty take advantage of this program.

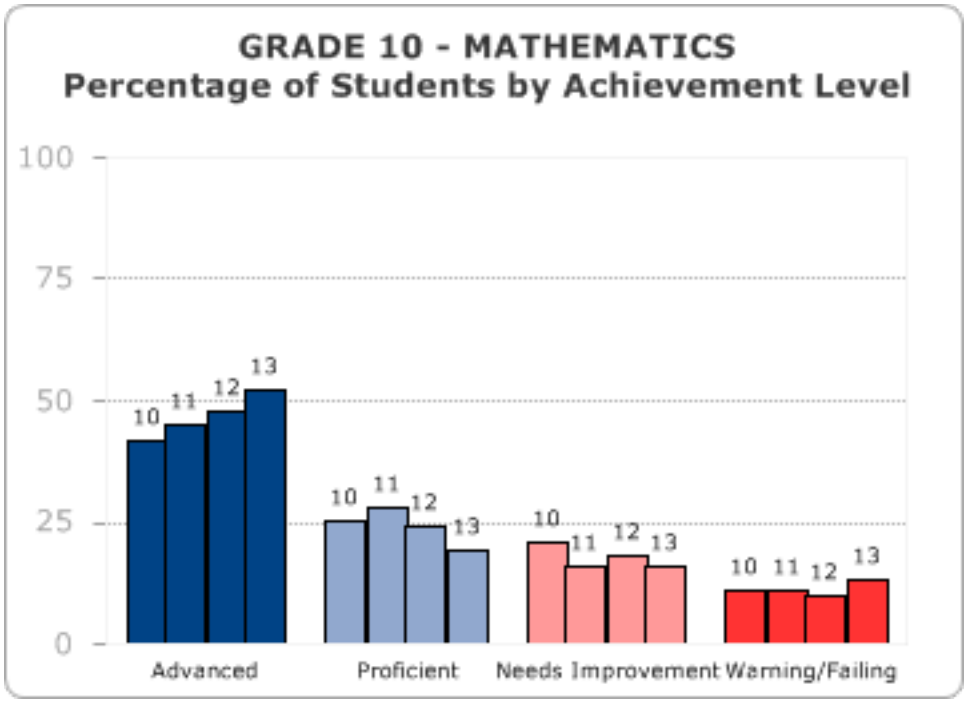
Socio-economic status can have impacting consequences on a student's growth. When a student is forced to work a job after school hours, time to study and do homework is severely limited. If they work long hours, they may come into class with sleep deprivation, which has obvious implications on the classroom. This is further discussed in Chapter 8.

Lastly an interesting demographic is the number of students who either are pregnant or have one child. While these numbers are not officially kept, it was widely known that during the time of this practicum there were at least ten females who were pregnant at Doherty and there were over 20 students who called themselves parents. Having a child while in high school is a certain challenge and is a leading cause of high school dropouts.

## Academic Performance

Doherty is known for having good college placement in comparison to the other Worcester high schools. 78% of students who graduate from Doherty go on to attend a college or university (Massachusetts School and District Profiles)

In regards to standardized testing, the school has good averages in MCAS compared to both the state and city. In mathematics in particular there has been positive improvement over the past 4 years.




Below are the averages for the state for grade 10 mathematics testing for 2012. It is clear that the school is above the average in all categories.

| % at Each Level | | | |
|---|---|---|---|
| A | P | NI | W |
| 22 | 30 | 28 | 19 |

Doherty also offers one section of Advanced Placement Calculus (about 20 students a year). The school's overall participation rate with advanced placement programs is 27%. Last year all but two students in the class scored a 4 or 5 on the exam, which is the standard level needed to apply for transferable college credit.

## Courses in Focus

The courses, which were used in this practicum, were the following:

- 3rd Period Pre-Calculus with 27 students
- 4th Period –Algebra 2 (Inclusion Class) with 27 students
- 5th Period Prep Period
- 6th Period Pre-Calculus with 28 students

As Massachusetts State law requires, a total of 75 hours of observation and 150 hours are required as part of getting an initial teachers license. This practicum far exceeded both of these minimums. Aside from being in the classroom for the above periods, there was a lot of time that went into prep work for each of the courses as well as for grading homework and assessments.

Coming into these classes after their Christmas break, the students already had a well-established routine and relationship with Ms. Renah Razzaq, the official teacher of the classroom. The observation hours were spent understanding this routine and looking to see how it could be molded into something new, but not overwhelmingly different. The observation period proved useful because once the day came to begin teaching alone, the transition was seamless.

While the grading policy did alter between teachers overall academic performance stayed the same or improved in a few cases, which will be discussed later in this report.

# Chapter 2: Planning Curriculum and Instruction

Teaching, like most occupations, is no exception to careful planning. Going into a lesson without a legitimate lesson plan is a great way to lose control of the classroom. While some experienced teachers can act on spontaneity, a lesson plan is crucial to successful implementation of curriculum for beginning teachers.

I learned to construct a lesson plan as a part of WPI's Teaching Methods course. The basic format that I learned was a three-tiered system. The first part of the lesson plan was what is referred to as a "Do Now". Do Nows are a quick assignment that students will see when they come into the classroom on the board. The assignment takes little explanation and can be completed in about two or three minutes. While the class comes into the room they will have a routine where they will immediately grab a piece of scrap paper and start working on the Do Now. This gives the teacher the opportunity to mark attendance and take care of any last minute preparation as the class comes in. The point of the Do Now is to assess some prior knowledge the students have coming into the classroom and then use it to perhaps bridge this knowledge and scaffold it to a new subject that will be part of the main lesson. This often serves as the motivation for the class.

The second tier is the actual implementation of the lesson, which is the majority of the lesson and as one would predict takes the most effort to prepare. The planning of the lesson takes multiple steps, which will be explained in further depth but in short are planning of knowledge to be presented, planning of the delivery method and a planning of assessment. Each of these three components requires quite a bit of care and energy and takes up a majority of the teacher's energy.

The final tier of the lesson plan is a closing summary. It is essential to take the time in every lesson to summarize and complete any ideas that were presented to the class. Imagine a television show with a continuing plot. The show can be structured in two different varieties, either each episode is self contained or each episode is built strongly off the last and requires the viewer to be completely up to speed with what has been going on. The second scenario can be easily alluded to the college atmosphere. In college, lectures often are built back to back and require the student to be very in tune and aware with what is going on in the classroom. In high school, each class should be thought of more self-contained. While one cannot ignore the necessity of prerequisite knowledge for a class, it is the high school standard to have a self-contained lesson in each class, meaning that each lesson plan has a concise beginning, middle and ending. The end of each lesson is what perhaps sets apart a high school lesson and a college lecture. The ending of the lesson should successfully summarize the topics presented and briefly assess the class as a whole's understanding of the material. This will provide guidance and direction for the next class as well as solidify emerging concepts and ideas the students have.

As previously stated, with the three-tiered lesson plan that has a distinct beginning middle and end, the middle is certainly the most cumbersome part. The first step in planning the lesson is to decide what material to teach. While this varies from school to school and state to state I can say with plenty of certainty that the Doherty decides on what material to teach from looking at the Mass State frameworks. The frameworks are referenced daily in teacher-to-teacher conversations and are the foundation of curriculum planning.

The Mass Department of Education institutes these frameworks and updates them very few years. They are developed from the work of educational researchers who study various educational models and look to improve the overall state's education system from a holistic approach ranging from kindergarten to twelfth grade. In fact these five standards (Chapter 2-6) are all part of the frameworks. The last time the frameworks for Mathematics in Massachusetts were updated was 2011. The department head at a school will each year review these frameworks and form a strategy to make sure that all of them are being utilized in one of the courses offered. Once they have been distributed by course, teachers teaching the same course will meet with the department and discuss how they will incorporate those various frameworks into the curriculum for the year usually dividing them into units. While ideally for each similar course each teacher will implement the same unit frameworks at the same time and pace, once the department meeting is over to discuss what frameworks will be taught, discrepancy will arise amongst the individual teachers.

Different teaching styles and individual preferences will begin to take shape and cause different sections of the same course to move at different paces and cover the same material at varying depths. This is not a huge problem though because ideally teachers who share sections of the same course will communicate and do well to adapt and adjust their lessons to be more or less in sync. While it is impossible to expect teachers to all instruct identically, there are plenty of counter measures to ensure that they are more or less moving at a similar pace and teaching the same material.

Once the individual teacher has these frameworks divided into units from the department meeting it is for the most part completely up to them on how they will design

their lessons from it as long as the given material is met. When in my practicum I had to take these frameworks and plan them in a logical sense that would fall into a variety of schedules including how the grading terms were divided, when school vacations were and perhaps most importantly how the lessons would align with the days of the week. I learned quickly what days were good for assessment and what days were good to introduce new material. For starters, you would never want to start material on a new unit on the Friday before vacation, you should be taking the time to summarize or assess the topics learned in the preceding days.

Once you have your frameworks neatly divided into units and have furthermore planned your schedule for either the term or the year on how the units will be presented you are finally ready to make a plan of attack. Figuring out how to best take the knowledge you have either internally or from the frameworks and figuring out an effective way to present it to the students is in essence, the pedagogical challenge. Once again, the teaching methods course was imperative for me to understand this process. However just as equally important may have been my observation period during the practicum where I was able to see complete, well-planned lessons play out.

I've found that the best method of instruction varies on so many factors. The biggest factors I have found are course specific material, the individual teaching and the individuals being taught. Obviously the methods used in a math class compared to the methods used in a reading course are very different. Not to say that there are no similarities, but most of those fall under classroom management, broad models of assessment and lesson planning. This is why Massachusetts State law designates what subject you are able to teach at the high school level. It would be impractical and illogical

for me to teach social studies and think that I knew what I was doing because I was a certified math teacher. Learning teaching methods specifically designed for math and science teachers in my teaching methods course at WPI was a huge advantage for me.

In regards to individual teaching style, it is important to recognize that teaching styles can range just as much as a learning styles can. It is a double-edged problem to find a way to align your teaching style with the learning styles of the individuals that you are teaching. While my personal style took shape and certainly changed throughout my practicum, I found that my style looks to have students inspired or driven to learn the material internally. Having students who actually want to learn the material or feel that there is some benefit to understanding the lesson other than passing the course was huge for me. This is all to easy to recognize when you spend half of your day teaching high school students and then the other half of the day being a college student. Our Do Nows would often include some sort of real world problem that I would look to spark some curiosity in the student's minds. Unfortunately not everyone is so easily motivated and for me I would occasionally look to take a more personal approach.

In my practicum I had students who just had no interest in being there and were simply occupying a seat because they are obligated to do so by state law. While this is at first discouraging, I found that every one of those students was relatable on some personal level, it just took a bit more of a personal approach. For example I had one student who worked a job after school, came from an impoverished home, and had a baby boy at the age of 17. Obviously math class was not his priority, and he let me know that via his attitude and general behavior and disrespect in class. After about a week of this when I first started teaching I had had enough and decided to ask him to talk to me after

class. When we sat down together, I told him what I perceived to be the problem and wanted to let him know that I appreciated the difficulty of the situation he was in. We talked about it for about five minutes and while I can't necessarily fix all of his issues at home we were both able to understand where the other one was coming from and were able to move forward with a better appreciation for each other. From there his class participation and subsequently his learning increased throughout my stay, it was great to see him so motivated by the time I had left. Taking the extra couple minutes to talk to this student made all the difference for me and for him as well, whether he knows it or not.

While intrinsic motivation is perhaps the foundation of my teaching style there are many methods and practices that I picked up which also shape my current teaching method. These methods can be thoroughly depicted in the attached lesson plans in the appendix but I would like to take the time here to elaborate on a few that I found most effective.

Classroom participation is something that I really value. If everyone is participating they are in a sense either learning or making attempts to learn which is exactly what you need as a teacher. To keep students participating in class I would implement a number of methods. My favorite, which may be a bit controversial, was the cold call. While I as a student did not enjoy being called on when my hand was not raised I certainly remember how it would keep me very aware of what was going on in the classroom in fear of public humiliation of now knowing the correct answer. While I would not always call on the person who was paying the least attention, it did certainly

maintain an atmosphere of alertness in the room. It also went a long way in terms of classroom management.

Group work as an element of the class is something I feel can be used in almost any teaching discipline. While I may be a little bit biased coming from WPI, I certainly saw some great benefits coming from students working together on specifically designed assignments. When pairing weaker students with stronger students, whether it is students who differ in content skills or varying ELL levels, people were able to gain from each other. The only drawback is that that the stronger students will often feel like they are being taken advantage of. I would often try and make them feel like they were gaining enforced learning experience from teaching a skill to a classmate; it also is a nice thing to do. Group work would only go so far though, I would not have people work in groups if they were going to work on a quiz or test, projects and small assignments however great opportunities.

The final teaching method I'd like to elaborate on here is the idea of making your lesson plan dynamic. What I mean by dynamic is that everyone can look back on their education and remember that teacher or professor who would simply talk at you. It would not matter how intelligent or qualified they were, what really mattered was that they were not providing an effective delivery. Making your lesson dynamic is not as easily done as thought; it is really a combination of a bunch of small techniques that take some time to develop. From speaking with my teaching mentor, she told me that I came a long ways between my first and last lesson in this regard.

So what makes a lesson dynamic and not boring? Keeping things moving and interesting is where I like to start. Walking around the classroom while you talk and

teaching from different areas of the room will keep people alert and active. If you are able to vary the volume of your voice while still being audible you will sound much more interesting. Loudly celebrating, quietly discouraging poor practices and other tonal alterations can bring humor and attentiveness to the classroom, just be careful to not come off as that classic crazy teacher.

Having the same format of lesson plan each day can become routine and is another prime example of your students will lose interest. If you take the time to diversify how you instruct people will come into class not knowing what to expect. If each lesson is PowerPoint presentations or examples out of the book people will start pulling their hair out. Take the time to play an interactive game that reflects on the material or get people moving around the classrooms with some sort of activity. For example when we began learning about radians and degrees of a circle, we took the time to move all the desks out of the middle of the classroom and "draw" a giant circle diagram. Each student was assigned a radian and a degree measure, which they had to state if they were called upon. It was these unusual, yet effective, interactive lesson plans that I often found the most interesting.

Finally you need to be able to teach to a diverse crowd of learners. Classically learners are divided into three broad categories: visual, audio and kinesthetic. While there are countless classification systems of learning types the important take away is to understand that everyone learns things in slightly different ways. It's important to recognize when only certain groups of your students are succeeding in classroom assignments. It may be the case that you are only teaching effectively to a certain group, when this happened I made sure to immediately adapt the way I was teaching and look to

incorporate everyone in the classroom. Apart from this it keeps things less bland and your days from becoming routine.

It is important to distinguish between having a routine lesson structure and a routine lesson plan. All of lessons had a Do Now, a lesson implementation and a summary at the end, this did not mean that my lesson was routine. I would actively work to ensure that my actual methods of delivering information did not become boring routine.

At this point we have discussed how I would select what information I would teach and how I would deliver the material, but the last piece of the puzzle is how exactly do you assess how well you and your students are doing. Coming into my practicum, my students had been with my mentor teacher for half of the year and I was given their current grades, which gave me a loose idea of their academic performance compared against each other. From this, my mentor teacher gave me complete freedom to alter and change the grading system she used for the entirety of my practicum. The basic grading structure was as depicted in the table below.

| Assignment | Percent of Term Grade |
|---|---|
| Do Now's | 5% |
| Participation | 15% |
| Homework | 20% |
| Quizzes | 20% |
| Projects | 10% |
| Exams | 30% |

I decided to take the time to use this grading policy, firstly because it maintained fluidity between my mentor teacher and myself and secondly because it came off to me as incredibly fair.

The Do Nows as I stated earlier are a quick motivational part of my lesson that would begin the class and would either introduce a new concept or reinforce an old one that would help scaffold into a new one. You would get a 70% for just making any attempt at all. If you got a correct answer then it would be a 100%. You would only receive a 0 if you made no attempt at all to solve the problem, though this rarely happened. These assessments were designed to be quickly graded and played a small but important role in seeing where the class was with certain skills.

Participation as I said earlier is something that both my mentor and I value. If you are participating, the learning process becomes so much easier. When everyone is involved in the class, there is a group mentality that learning is good and makes the whole process very enjoyable. Grading participation can seem a little subjective, but when I began teaching I made an effort to make sure that everyone knew what good participation was. If they were able to meet these criteria, then they would receive the full 100%, it was easy points to receive and had only positive effects on the classroom.

Homework was something that I tried to make very worthwhile for my students. If they were able to perform well on the homework then I let them know that they would be able to do well on the exams (going back to the intrinsic motivation I was talking about). Homework would usually checked quickly for completion as students were doing the Do Nows at the beginning if the period. One in about every five homework were collected and graded for correctness, this would discourage students from copying each

others work because I let them know that if I was able to tell they were cheating on homework then they would get a 0 for their homework grade on the term as well as face disciplinary action from the school.

Projects were group work as I described earlier and often honed in on technical skills that were perhaps too time consuming or technical to really be assessed in an exam. I only gave out two projects while I was there, and each of them were partner projects. The groups were made from pairing weak and strong students and they were designed to encourage communication between the partners. I gave them ample time to work on the project in class but they also were expected to work on it as a part of homework. In the end the general performance on projects was good with most all groups receiving As or Bs.

Tests and quizzes for me only differed in their size and scope. A quiz would focus on a lesson or two while a test would assess a students understanding of an entire unit of information. Tests would usually last an entire period while a quiz would take about half of a class. A big issue for test takers is testing anxiety, I would do my best to eliminate any anxiety for students and always present in a manner that did not teach to the teach but would teach to bettering of the student. While I would never put something on an exam that would not be covered in class, I would look to not have the exam be a raw testing of the frameworks. They would be designed so the test taker felt that they could demonstrate that they had learned something and that it was applicable outside of the classroom. Tests while they were my biggest weighted grading criteria were not a source of pressure or anxiety in my classroom. For examples on tests and quizzes view the appendix at the end of the report.

In summary my planning of curriculum and instruction can be broken down into several key components. The three parts of each lesson were a Do Now, the lesson implementation and the summary. The implementation can be broken down into three smaller parts: the choosing of material to teach, the delivery, and the assessment of the delivery. This format certainly was modified and grew with me as I developed as a teacher but proved to be effective at the end of my practicum.

# Chapter 3: Delivering Effective Instruction

Delivery is key for teachers and as stated in the previous chapter is the heart and sole of what makes a teacher a teacher. In its simplest definition a teacher is a medium between knowledge and a student, the ultimate responsibility of a teacher is to deliver knowledge to their students.

An understanding of person-to-person communications is essential for effective instruction. You cannot just talk at the students for the entirety of the period, you need to be able to respond to how they are taking it all in and actively adapt. Communication is a two way street, while it is implied that you will be communicating to them when delivering your lesson it is often underappreciated how important their communication is from them to you. If you are going through your lesson ignorant to how they perceive your content given you may be wasting everyone's time including your own.

To ensure active communication between you and your students you should often ask students to explain something back to you or ask them to perhaps demonstrate a skill to the class on the board. If students do not know or are hesitant to answer it may be worth everyone's time to review and change the pace of the lesson.

Feedback does not always come in the form of straightforward responses, twice throughout the term I took the time to give students a feedback form that they could complete anonymously for extra credit. This provided me with a lot of valuable feedback not only for the specific class but also helped me develop myself as a teacher. While my mentor teacher would give me plenty of feedback, I also found it important to get straightforward feedback from my students in these surveys. Sometimes I would receive

unwarranted feedback that was not appropriate in front of the class. Fortunately with a little bit of conversation at the end of class, these issues would clear right up.

I was trained both by WPI and by my mentor teacher to always state my lesson objectives on the board. This process was something new to me and was something that I did not experience when I was in high school. Keeping an open mind, I used this method and it proved very effective. Writing the objectives on the board, gives students an understanding of what they will be able to do when they leave the classroom. It can serve as a motivational tool and it also give a sort of schedule for the class if you take the time to order them in advance.

When mapping out your curriculum at the beginning of the year, you can easily turn any framework into an objective. While the frameworks are worded in a very particular legal way, if you take the time to translate them into your lesson objectives, your lesson will basically plan itself. Going back to communication if you take the time to get feedback and assess if these objectives are being met, then you will be able to effectively teach to your students.

A teacher's role is not just to instruct a student in the classroom but also to motivate them to be able to instruct themselves when working outside of the classroom. Effective teaching will not only produce strong learning but it will also produce independent learning. Something that really bothered me in high school was when I had homework that I felt completely lost on. When my teachers gave my strategies on what to do if I was stuck and provided resources to either check my work or figure out the solution, I felt generally empowered and more motivated to do well in class.

My goal was for students to find themselves sharpening and expanding their skills learned in class on their homework. Especially for the skill level of my students asking a lot out of them on homework was difficult, so I wanted to make it as straightforward as possible. The same principle could be applied to my exams and quizzes. While I would put questions that would take their knowledge and push it one level further to answer a question, I would never put something that could be considered unfair as that would cause demotivated students and in my book is not what I consider effective instruction.

As stated in the previous chapter there are three broad categories of learners: visual audio and kinesthetic. Finding an effective way to reach each of these learning types is very important to a teacher's delivery. To reach each of these types you have to modify your teaching mediums, methods and assessment. Each one provides its own pros and cons but they can all be tied together in giving your lesson and assessments.

Visual learners do well with as you might guess visual representations of the material presented. To appeal to visual learners I would look to use things like graphic organizers, charts, drawings, and diagrams. Helping these students see the big picture of the material at hand will often give them perspective on the lesson. I would incorporate these elements into PowerPoint, drawing out word problems, and in situations where I would have to organize a large amount of information.

Audio learners are the kind of people who best utilize listening and speaking to take in knowledge. They gain a lot from having instructions spoken and repeated to them. Asking an audio learner to read out of the book and learn a new concept can be challenging for them. They respond well to people who vary the tone of their voice when giving a lesson. These specifics help them to remember importantly exclaimed things.

They are good at explaining or re-explaining processes that have been told to them and can elaborate well in problems with long answers. I looked to appeal to auditory learners by having often repeating my oral instruction and never writing something on the board without stating it orally. Asking students to explain things back to me lends itself well to this learning style.

The final type of learning style is a kinesthetic learner. These types of learners do best by straightforward doing the problem that is asked of them. Instead of having the teacher describe how to do a problem and then have everyone solve it, they would rather start by tackling the problem without any background information. The best way to accommodate these learners is to have people actively using a skill while they are learning it. In a simple example a kinesthetic learner would do well to solve an addition problem if you taught each step as you went through a specific problem. Kinesthetic learners value tangible hands on learning and real world results. Inclusion of these learners is easy with hands on learning and by using a straightforward object approach.

Another tool, which I picked up in my practicum and further developed afterwards, was how to develop my lesson plan to cater to English Language Learners or ELL students. Understanding the hierarchy that an ELL goes through when learning the English language is crucial to making sure that they understand the material that is presented even as a content teacher. Incorporating a deeper understanding of the English language is appropriate for all subjects when you are an ELL. It proved me well to learn who my ELL students were and figure out the best way to adapt my lesson plan to them.

My quality of instruction certainly altered as I progressed though my practicum. While I did learn some teaching methods and I was well prepared coming into the course,

much of learning how to learning how to provide effective delivery came from the experience. Understanding my audience and getting to thoroughly know my students played a huge role in my level of communication with them. When I go into teaching as a professional I know that my instructional delivery methods will only continue to develop and it is important to realize that what may be best for one classroom may not be best for another.

# Chapter 4: Climate and Operation

While you can certainly take steps to prepare yourself before going into your first high school class as a teacher, the biggest source of anxiety for me was that I would be unable to control the classroom. I was extremely grateful for the observational period, which allowed me to see just how the class operated from a passive perspective. My mentor teacher gave me the opportunity to be involved with the class before I started teaching, which helped them get to know me a bit. When the day came for me to take the reins and teach the class I was ready to go, however that is not to say though that I did not encounter any difficulties.

The first thing that I did on my first day of teaching the classroom was to outline expectations. I wanted to get an idea of what the students expected out of me and let them know what I expected out of them. We wrote out or expectations across the board and discussed them with each other. Afterwards we all signed them and took a picture of our "binding agreement" towards each other. This proved to be effective many times over down the round and it also developed a sense of respect between the students and I which in my personal philosophy is extremely important to have in a student teacher relationship.

This respect was strengthened with me being very open with my students. If I was proud of them for an accomplishment I would let them know, if not, I would let them know in a similar manner, which would hopefully encourage them to better. Getting to know students on a more personal level other than just recognizing their name and face went a long way to increase respect.

In terms of controlling the classroom on a day-to-day basis I met several recurring challenges. The first and most difficult was certainly the use of cell phones in class. Teenagers are getting cell phones at younger and younger ages and feel more and more comfortable using them in class. The school's policy was that they could have them on their person but they were only to be used before and after school. Predictably teachers would enforce this policy on varying levels. Many of my students thought it was acceptable to have phones on their desks, text in class or even make a call in class. When I started all of this quickly changed after I gave them my expectation on cell phone use. It took only one example of me enforcing the cell phone policy that the teacher can take away a phone when students have it out in class to have the entire classroom mentality flip flop. When I took the student's phone, there was a bit of a disagreement but it was short lived and the student was forced to have their parent pick up the phone from the main office after school. Nobody likes it when this happens which quickly prompted the cell phone use to stop.

Being authoritative at first was a bit awkward for me because I was only about 3 years older than most of the students in the classroom, however once our mutual respect grew and they saw that I was an enforcer of the rules that I implement. I had a few more incidents where I had to take away student's phones but not was met with that much resistance. This would have been a far easier policy to implement had all the teachers in the school been abiding or enforcing the same rules but such is life.

Keeping classroom attention when giving a lesson is key to total inclusion. People having a side conversation can disrupt the learning process for others in the room and be irritating to the teacher. One method I found very effective was using a teaching method

tool that is known as proximity. When students were speaking or really exhibiting any behavior that was disruptive, all I would do is move myself to the area of the room while teaching and like magic the disruption would go away. Using this method along with publically addressing blatant repeat offenders did well for me and for the most part the students would not chat to much when I was delivering a lesson plan.

My most difficult and most severe case of discipline was when I had to write up a student, which ultimately led to his suspension. The student, a male, was continually speaking with his friends in class. While the friend felt a little uncomfortable talking to him during class, the student did not seem to care even after being asked to stop multiple times. After the third time I had realized that he was not seated where he should have been according to the seating chart implemented at the beginning of the year. With that I asked him politely to move to his appropriate seat to which he responded with a swift no. I asked him if wanted to reconsider his answer and to which he still said no which led me to make a phone call to the assistant principal at the recommendation of my mentor teacher. I made the call and within a minute the assistant principal was at my door and I explained the situation. It ended with the student being escorted out of the room. The follow up was rather interesting to say the least. To see he official write up reference the end of the appendix.

After I had finished teaching that section I was asked to do a formal write up on the situation as is standard procedure when you call an assistant principal in the room. I made a written record of what happened and from my end of things that was all the action I had to take regarding the matter. I found out the next day that he spent the rest of his day in the office and was then suspended by the assistant principal for disobeying a direct

request from a teacher; the student had apparently a rich history with the assistant principal as well. I admittedly felt a little upset that I was the cause of the student's suspension because I knew from my high school experience that I did not want to be suspended for any reason. However when the student returned after a mandatory day off his attitude seemed to be well adjusted. Subsequently on my last day he wrote in my thank you card that he still thought I was a great guy even though I suspended him, which was great to hear because I felt a lot of grief towards the whole incident.

Learning to maintain the classroom environment was my biggest challenge in my practicum, but it was also the most valuable experience I have coming out of it. When I go into the professional teaching world, I feel so much more prepared to handle similar situations, which will inevitably happen because they are teenagers after all. My best reflection on classroom management as a whole is that it is important to keep a consistent and strong disciplinary policy. Unfairness and varying degrees of punishment will cause angst in your students and ultimately will lead them to disrespect you.

In terms of positive attributes of classroom climate I found it equally important to provide the students opportunities where they can laugh, express themselves and share some humor as long as we did not veer from the projected lesson plan. I had a huge appreciation for the Monday and Friday climates in the high school atmosphere. I would try and take a slower pace on Monday so students could get back into the swing of things after the weekend. Fridays would often have interactive games that would informally test skills and concepts learned throughout the week, with some sort of small trinket or candy as a reward. I am a strong believer that you should celebrate successes when you can to

work to develop a strong work ethic. To top it off on my last day, my mentor teacher threw me a very nice going away party with cake included.

Classroom management is certainly something that I will continue to development along with the creation of my own unique culture. I hope to implement a fair and enjoyable classroom when I have a room that I can call my own. I want to enjoy my job while accepting that not every day I will go home and feel good about what has happened in class.

# Chapter 5: Promoting Equity

Promoting equity in the classroom is crucial in all parts of academia. I promoted equity in my classroom by working to develop an inclusive environment that worked to promote achievement for my students with no exception. I strongly believe that if a student is willing to put the effort in, then they will certainly be able to succeed. If they are not willing to put the effort in, I believe that as a teacher you should be willing to do whatever it may take to get them motivated about the content learning. This motivation may have been the most substantial roadblock for me in terms of trying to promote equity.

Taking the time to get to know a student before or after class can go a very long way. Understanding family and cultural backgrounds can be very effective from an ELL approach and it will also help the teacher and the student feel more comfortable with each other. An important step that I took when I started teaching was to read over the beginning of the year student questionnaire sheets that my mentor teacher sent home with the students. These questionnaires asked about things such as family dynamics, first language spoken, hobbies, and interesting facts. Reading these over before I started my teaching hours certainly helped me feel like I knew the students on a whole new level. Throughout my practicum I was able to reference these sheets if I felt as though I needed to better connect with one of my students.

To get that initial motivation that I referenced earlier is really no easy feat. Thankfully most classrooms usually have a core membership of people who come in and are ready to learn; no motivation required on the teacher's part. My classroom was no exception to this rule. You then have the students who will only be motivated if they have a respect for the teacher. While I feel I only had a handful of these students fostering a

relationship of respect took a while for me to create as a student teacher who was only a few years older than the students. While respect does not necessarily become mutual overnight, after a week or so I felt that all my students respected me once they were in my classroom for a few days. My transparency in regards to what the students expected from me and what I expected from them proved to be really effective.

Considering all the students of the classroom you still have to consider the students who are not motivated about the content and it does not have anything about you as the teacher, they are just apathetic towards the content or maybe apathetic towards schooling in general. These students can be a real challenge, but my most effective approach was to have the material intrinsically motivate these students. Letting them know that they learn goes farther than getting them through the class and ultimately to graduation. Showing how some of the math we learned can be used to solve interesting, applicable and real world problems is huge! If the student sees that the content may have some benefit to them rather than another grade on their report card then they will certainly be motivated to perform better. If you can do this then everyone will be ready to learn together and people can start out on a level playing field of motivation.

Keeping everyone participating is the first way to keep everyone on the same page in the classroom. Each lesson plan is designed to incorporate classroom participation, however it is up to the teacher to ensure that this participation is being spread out on an even playing field. Calling on the same student that raises their hand is not effective teaching. When asking for answers to a question I will ask for hands and vary semi-randomly who I will ask for a response. If the same crowd begins to raise their hands for everything, then I then begin cold calling on people who I want to participate. It

is important not to play favorites with the same group of people in the classroom because that will cause a divide in the classroom.

Another method to keep students on their toes is to have a cup of tongue depressors each with a student's name on it. Drawing these randomly will ensure an even distribution of classroom participation. The trick that many people don't know about is that when necessary the teacher may read someone else's name that is not on the tongue depressor to keep people engaged in the classroom. Working your way around the room moving from seat to seat asking responses is also a fair visual way to show that you are asking from everyone in the class to participate.

Tracking success is important, if half the class is getting As and the other half is receiving Ds does that mean that you are promoting equity in your classroom? While there is going to be some sort of achievement gap no matter what, it is important to realize when you may not be teaching effectively to all of your students. If you are not varying how your delivery effectively as discussed in the previous chapter then not everyone is being fairly educated.

I would often look to see what students who were not performing well had in common with each other. The common denominator was that students who worked after school jobs and therefore did not have much time or energy to commit to homework after school were often the ones not doing well. The problem was really that they were unable to prioritize between their jobs and their coursework. This can be difficult especially when the students are depending on that job to support themselves or their family, My mentor teacher and I decided to create a small afterschool program simply titled the homework club that met Monday, Tuesday, Wednesday and Thursday for an hour after

school ended. This intent of this club was just to provide a venue where students could work on their homework immediately after school before their after school job started. We would alternate between ourselves and a couple other teachers days that we would proctor the study sessions. During these times we would be available to help with content questions and would work to improve study work habits. The homework club, although it was a bit time consuming was very effective for those students who took advantage of it. This is just one example of how a teacher can accommodate those who are not performing at the same level as everyone else. To ensure equity many accommodations will most likely have to be made.

Part of the Massachusetts DOE's standard on promoting equity requests that teachers promote an understanding of the American civic culture an that students recognize and utilize their membership of a local, state, national and international community. While this is not necessarily easy to do in a mathematics classroom, I made do with what I could. Our classroom would always take the time to say the pledge of allegiance in the morning announcements and would show their respect during the moment of silence. Doherty Memorial High School also had a Doherty Television program or DTV where students would report to the school on school, local and national news. Aside from taking the time to watch these programs, which were randomly scheduled throughout the semester, I would try and make time to discuss perhaps some of the not so clear-cut issues that were brought up in the videos. Students enjoyed sharing their opinion and having a moment of the day where they could discuss the issues from the program.

Another notable community happening was the passing away of one of the school's tenured faculty during the year. Her sudden, unexpected death warranted classroom discussion, as this was a teacher that many of my students had at one point. Taking the time to talk about something besides Mathematics is very important especially, when it has the gravity of something such as the death of a faculty member. Students were able to share their feelings in an open forum for five or so minutes and reflect upon each other's statements. These seemed well worth the little sacrificed class time as the students were engaging themselves as members of the school community and putting themselves in a more positive state of mind.

The last way in which I looked to promote equity in my classroom was by engaging students' families on multiple levels. Recognizing a student's native language is something that is crucial to learning and for the most part I knew all of my ELL students before my practicum started. Occasionally, I would make a phone call home if a student needed some extra support and inform the parents of his or her recent successes and struggles. Getting the entire family on board with the students approach to learning was very effective even if it just meant sharing with the parent what was going on. Having support both at home and in the classroom can certainly boost a student's confidence.

# Chapter 6: Meeting Professional Responsibilities

One of my most notable takeaways from my practicum was learning about how well defined and how numerous the responsibilities of a teacher can be. The way I see it, a teacher is being pulled from all directions to perform to certain expectations and standards.

First and foremost a teacher has to do what it is expected by them from the school's administration. This being their department head, their colleagues, assistant principles and principles. Department heads are most responsible for outlining the content to be taught during an academic year and are usually responsible for making sure you are adhering to the plan. The colleagues (other teachers in the same subject) will also be influencing you to perform at an expected level. Whether you are under or over performing I find that teachers within a department will want there to be an established standard so nobody sticks out as the different teacher and everyone is given the same level of respect. The assistant principal's main responsibility is to ensure that you are adhering to the disciplinary policy and will serve as an intermediary should there be a disruption which I will discuss more of below. Finally in regards just to the school's expectations a teacher must adhere to the principal's expectations for they are the "CEO" of the school, determine your salary, determine whether or not you lose your job if it is in jeopardy and will promote you if the opportunity arises.

It is simply not enough to meet these expectations; teachers have various certification requirements, which they have to meet on the state and national level. Teachers are required to attend multiple professional development days each year and have their license recertified every few years depending on the state. Getting my ELL

certification was something that was federally mandated because Massachusetts was out of line with past legislation that required the adaptation of teachers to cater to those who did not speak English as a first language. Standardized testing such as the MCAS is also something required of the state and teachers are put under a lot of pressure to have their students perform at a specific level. It is important to recognize that the government standards are constantly changing and to always teach to the policy.

Learning my legal responsibilities was something that I for the most part picked up during my observation time. Certainly my main objective as a mathematics teacher was to teach mathematics to my students based on the curriculum frameworks outlined by the department head and created by the state. Simultaneously I am also asked to adhere to the following mission statement as a member of Doherty Memorial High School.

*"Doherty Memorial High School empowers students to become critical and independent thinkers as well as life-long learners. We encourage diversity and creativity as we partner with our students and their families, our teachers, and our community to provide an education in a safe and caring environment."*
*(Doherty Memorial High School Programs of Study, 2012)*

My mentor teacher reminded me often that if I was not meeting the goals of this mission statement then I was not meeting my professional responsibilities. Encouraging life-long learning was something that was especially valued by the teachers in the Math Department which helped served as a motivator to incorporate things into my lesson plans that will perhaps encourage my students to use mathematics for the rest of their lives.

In regards to my legal responsibilities I also learned a lot about what was expected of me in terms of becoming a certified teacher. Not only did I have to complete a

practicum of 150 hours of teaching and 75 hours of observation. I must also be certified with the MTEL exams, have completed a college level program in my particular field and be Sheltered English Immersion endorsed. Luckily I will leave WPI with all of those certifications!

The biggest legal obligation I learned about during my practicum was in regards to Individualized Education Plans or IEPs. IEP's are a legally mandated document, which outlines how a teacher must cater to a specific student who has a learning disability as defined by the federal government. The teacher then uses this IEP to modify his or her instruction to teach more effectively to the student. I had multiple students using an IEP and all of them had varying levels of requested obligations. A few simply mandated that the student be placed in the front of the classroom so they could see the board more clearly while others requested that a student be given additional time on assessments. Some would even ask for students to have written copies of notes provide to them because their note taking ability may be inhibited in some manner. Whatever the IEP requests it is important to follow it to the best of your ability because there can be legal ramifications if it is not followed.

The most trivial responsibility of a teacher is to be well versed in the academic discipline to which they are teaching. Attending college is not enough to satisfy this, as a teacher must also be able to convey their knowledge to the students. Taking teaching method courses and going through my practicum has certainly helped me in this regard. There is a balance between teaching ability and content knowledge that must be reached to be an effective educator.

Showing enthusiasm for the material will also go a long ways for your students. Setting the tone by being very excited to play a math game on a Friday may seem a little unnatural at first, however after seeing the difference between unmotivated students when you present it in an unmotivated fashion and the how they react when you are motivated will open your eyes. Going a bit over the top in that regard will help your students engage. Being excited about things such as Pi Day (March 14th) will convey to your students that you are genuinely excited about what you are sharing them and will perhaps even inspire them to want to learn what you want them to learn. My students certainly didn't forget what Pi was after we celebrated Pi Day by treating ourselves to tabletop pies provided by the school. Leading the way with your motivation for the subject will go a long ways.

Part of working in a professional environment is working in collaboration. Your colleagues are in no way your rivals; they are some of your strongest allies. During our lunch break some of the other math teachers would share with me their lesson plans on specific topics they knew I was covering and even encouraged me to use them if I thought they would help. Playing of their experiences was a valuable asset. Most often, these teachers would know about trouble students and could give me advice on how to best handle their challenges. We would also work to make sure assessments in the same course we of equal difficulty and caliber. Working together helped make our curriculum more standardized across the department and helped us to teach more effectively as a group.

Another important professional responsibility is to reflect on your performance as a teacher. Throughout my practicum, my IQP advisor came in to evaluate my performance three times. After each observation, we would discuss some of my strengths

and weaknesses as a teacher and would talk about what steps I can effectively take to improve my teaching. Throughout my three observations we touched upon various topics and I was told that between my first and last observation it was like night and day.

I would also take feedback from my mentor teacher on how I could improve. Her experience and feedback proved to be invaluable. Whether it be a quick little suggestion between class periods or a sit down discussion at the end of a week, I was always able to take something away from her that could help me the next time I taught. Having an open attitude and being receptive to critical feedback is extremely important especially as a novice teacher.

Finally in terms of teaching responsibilities there are countless school specific policies that one must become familiar with. While many of these are common sense and can be learned on the fly, the sooner one can educate himself or herself on the disciplinary policy the better because discipline does not wait for you to become familiar with its policy. Simple things such as learning what the rules are on using cell phones; chewing gum or wearing a hat in classroom can go a long ways. If you are not familiar with the policy students will take advantage of it.

Acting in accordance to the school's policy for teacher behavior is also vital. This includes things such as appropriate use of the Internet at school, what an appropriate student teacher relationship is, and how to treat co-workers in and out of the workplace. Again most of this is common sense but it is important to understand that there is a higher moral expectation for teachers in terms of how they behave as a member of society.

# Chapter 7: Influence of the College Education on Teaching

## Impact of Academic Knowledge on Teaching

Teaching at WPI is not one of its most revered programs, in fact it is most likely one of its smallest. Often I am posed with the question why did you attend WPI if you did not want to become an engineer or a scientist? Many people say I could have been educated in teaching at a much less expensive state school. To this I often reply in asking them if they think that mediocre educations should be reserved for schoolteachers.

The reason I choose to become a teacher was because I feel that with a world-class education such as WPI's I feel that I will be able to bring so much more extra and valuable content to the classroom. To be quite honest almost all of the mathematics I have learned after my first semester freshman year is far beyond even the most high caliber high school education. It is my appreciation and deeper understanding of the courses I have gained from my upper classmen years that will truly make the difference for me as an educator. I will never be asked to solve a differential geometry problem in a high school educational setting, but I do know that it will give me something that I can reference for higher-level motivation to my students. Being well versed in my discipline will bring a level of respect to my students and hopefully they will appreciate and trust that I am very familiar with and know what I am talking about in terms of mathematics.

Fortunately, part of my college education has been taking teaching courses that will help me be effective in delivering my academic knowledge. Being a part of a teaching methods course has opened my eyes to many resources that I did not know existed beforehand. Having that opportunity to have mock lessons and being given the

opportunity to "fail" and receive critical feedback is invaluable especially when that can happen with people who are not actually your real students.

The practicum was another level of experience that was able to affirm my intentions in a future career in teaching. While the consequences of failure in the student teaching atmosphere are much more real, it still provided a nice scaffold between teaching to peers and teaching on your own in the real world. The practicum I believe will be the thing I look back on from WPI the most in my professional career to make sure that I am as effective as possible in my teaching strategies. It's wonderful that my WPI career is able to incorporate the practicum as part of my degree requirement with the IQP.

### Ability to Relate Academic Knowledge to Real World Context

WPI prides itself on real world application and its motto of Lehr und Kunst or Theory and Practice. There is not much reasoning to learn content if you can't eventually apply it to real world scenarios. Fortunately WPI's curriculum applies to this motto to many of its undergraduate courses.

In the majority of my classes, regardless of it being in the mathematics discipline, my professor takes the time to demonstrate applications of the material. This attitude and teaching atmosphere I feel will translate well to teaching in the high school environment. High School students yearn for application, and it is usually used as the motivator for my lesson plans. For many students, their formal education in mathematics ends in high school; therefore it is to everyone's benefit to make the content knowledge they are taking in as useful as possible. There are certainly some skills that are harder to translate

to real word application than others. For example polynomial division does not seem nearly as practical as understanding the Pythagorean theorem, however any parallel that can be drawn to the real world will help motivate your students.

My academic knowledge in regards to teaching speaks for itself. Without it, I would not be prepared to be a teacher in actuality or in the legal sense. My MQP helped can serve as evidence that I was able to make real world use of high content level knowledge and apply it to real world context. Very few things in the WPI undergraduate education will go without application.

I feel that moving into a teaching career the atmosphere will certainly prove to me as advantageous. High School students do not want to learn about things that have no immediate application to them.

I would bring world context into my lessons in two key areas: the lesson motivation and an applicable problem. For instance, when discussing exponential decay, I would ask students how people find the age of really old materials. The conversation would lead to them saying how they would be interested in learning how to do that. Later in the lesson we would actually find the age of something real that we were able to use the mathematics on we had just studied together. Students thought this in particular was very fascinating and it inspired them in future content areas.

## Chapter 8: Class Focus

I was responsible during my practicum for three classes. Third period I had twenty-seven students in Pre-Calculus. Fourth period I had twenty-seven students for an Algebra 2 inclusion class. Fifth Period I had off as lunch and prep. Sixth period I had another section of Pre-Calculus with twenty-eight students. In total I was responsible for eighty-two students.

My day usually started around 8:15 when I would arrive at Doherty during second period. The classroom I taught in, room 317, was vacant during second period, so I was usually able to prepare board and classroom during this time. Getting there around 8:15 would give me about forty minutes to get settled and prepare my lessons which I found to be a very important part of the day. Missing this time in the morning would through my entire day off. My prep during this time would usually consist of writing lesson objectives, Do Nows and homework assignments on the Board and making photocopies of any materials needed for the day. After this was done I would make sure the classroom computer and projector were working properly so I would be able to take attendance and give lesson plans accordingly. Any extra time I had would generally be used to either grade things or brew coffee.

By the time third period would begin I would be waiting by the door way ready for the students to come in and hand them a piece of scrap paper for the Do Now and might ask something such as please take out your homework. This is a routine I followed for all three of my sections.

The big challenge brought by my Pre-Calculus sections was how diverse their mathematics skill sets were. I had plenty of students who should have never left Algebra 2 and I had plenty of students who were only in my class because they did not feel like taking the honors level course. They were really only there because they felt that they would have an easier time in the basic level class. While I did have about ten or so students who were appropriately placed, they were easily swayed to behave like one of the other two groups.

Much of Pre-Calculus' content I covered focused on trigonometry. While trigonometry can arguably be its own course I made an attempt to be sure and reference the namesake of the class "Pre-Calculus" Ideally the students leaving this class should be ready to go into a college level calculus program. We would sometimes take a side detour from our scheduled content to reinforce a concept that I knew would be necessary for Calculus. Things such as exponential and logarithmic properties as well as polynomial properties were important to have a strong understanding in because they are foundational in both Trigonometry and Calculus.

In my third period, I had three ELL students. Each student had a varying level (two, three or four). The level two ELL students were particularly challenging to work with. He was from Ghana and this was his first full year in American schooling. We would often take the time after class to specifically review what was asked of him in terms of content or homework. Luckily, he had covered some of this material in his home country. The level three and four were much more independent and even sought out help from the school's language specialist when they needed assistance.

I had two students with IEPs in this section, which only called for physical accommodations. One student was required to sit in the front of the room and given larger print reading materials. The other simply needed extended time on exams. These were fairly easy to handle, as they were simple adjustments to my teaching.

My fourth period Algebra 2 section was certainly my most challenging group of students. Being an inclusion class meant that there was a teacher's aide in the classroom to assist me. This was only beneficial when he showed up which was about a third of the time. It also did not help that he was the football coach meaning he was a buddy with about five of my students in the classroom. Regardless, he was effective at times in helping with classroom management and would sometimes repeat things I said in a way that was perhaps easier for the students to understand. Although I have my opinions on whether he was actually helping students learn the material instead of just helping them pass the course – I feel as though he did take off a lot of the burden of fourth period.

For fourth period I had 5 IEPs and 3 ELLs. These were a bit more challenging to handle than my third period class. The IEP's asked for things such as written homework instructions, additional practice material for new skills and weekly individual reviews with students. The IEP's certainly did take time out of my day to accommodate but ultimately I feel we were better off with them than without them. The ELL students were all level three and I would often make an effort that I would pair them with proficient English speakers when I would be teaching to language based objectives. They would often try to work together because they all spoke the same language, however I would usually spate this because so they had the opportunity to grow as English Language Learners. ELLs were not as challenging as the IEP students.

Algebra 2 covered things such as polynomials, basic graphing, factoring, the quadratic formula and some basic skills such as using like terms and manipulating polynomial equations. The pace was much slower in this class, but I can say with confidence that the materials we did explore we covered in full. Many of the students in this course were taking this as their last math class ever, so motivation was certainly a consideration. I also had a few students who I know worked long hours after school. Finding a suitable time for them to study and work on homework was challenging but do able.

My lunch break was usually about ten minutes of eating and forty minutes of preparation. I would use this time to first take a breather and sit down for a couple of minutes. I really enjoyed sitting with my fellow math teachers and having candid conversations about whatever was on our minds. We would also speak academically and share ideas and best practices for the content we were teaching. I would use the rest of this break to grade and prepare for future lesson plans. In an ideal world I feel I would have been able to do all of my grading and prep work at school, however I usually found myself working on teaching things at home outside of the school day hours as did many of my colleagues.

My day would wrap up with a very enjoyable sixth period. These students were usually wide-awake and in good spirits after lunch. This class only had one ELL and one IEP student. They took very little adjustments and to between their behavior and performance, you hardly noticed that they needed special treatment in my classroom. This class was also simpler because I had already had one run through of the same

content earlier with my third period students. From the student's perspective they were probably given a smoother lesson if they were in the afternoon section.

After this I would pack my things and walk back to WPI where I would swap roles and play the student for two classes in the afternoon. As I said before I would often find myself taking the time to prepare for my lessons at home, make phone calls to student's home or grade material.

Some of the biggest challenges facing an urban school that I faced were adapting to the different students very diverse lifestyles. Many of my students had forty hour a week jobs or had a child to take care of at home. These responsibilities were very foreign to me because I don't live that lifestyle and the high school I attended did not have anyone like that either. I even had students that were known gang members. Figuring out a strategy to adapt to these students was not easy, but I found that perhaps the most effective method was to find some way to intrinsically motivate these students and make it worth their time to learn the material I was presenting to them. In the end, I do believe I was able to make an honest impact on all of my students.

## Conclusion

Doherty Memorial High School is an urban school in Worcester Massachusetts. The school is very culturally diverse in comparison with state averages and while it may not be on par in standardized testing with other schools in all content areas, it is certainly on par in its Mathematics department. Doherty faces many challenges being an urban school however; in the grand scheme of things many of the students there are very fortunate when considering education on a global standard.

Through both my practicum and via this report I have attempted to demonstrate how I have met the five professional standards for teachers set by the Massachusetts Department of Education. My practicum is certainly one of the most, if not the most valuable educational experiences I have taken away from WPI. The experience that it gives a rising teacher such as myself is truly invaluable.

In summary a teacher should meet the following standards:

- Plans Curriculum and Instruction.
- Delivers Effective Instruction.
- Manages Classroom Climate and Operation.
- Promotes Equity.
- Meets Professional Responsibilities.

Looking forward in my teaching career I hope to perhaps have a student teacher of my own that I will be able to give a comparable mentorship experience. The combination of observation time and actual teaching time should absolutely be something that each teacher has to go through.

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# Appendices

## Sample Lesson Plans

The included lesson plans depict my two styles of lesson plan writing. The first in word document from are for formal use. It was not ideal to sit down and type up lesson plans for every day of the week. However, when I was being observed critically or needed to submit my lesson plan for some other regard I would type it up. On most days I would simply hand write it because I would be the only one referencing them and could understand as well as tolerate my own shorthand and handwriting.

Algebra 2 (4th Period)
3/14/13

Objective: To learn and to use properties of exponents.

Do Now: Consider that x*x = x^2 (Where x^2 is in exponential form) What would the following be in exponential form?
x*x*x*x*x
a*a*a
a
a*a*a/(a)

Segway answers from do-now into the lesson. Overview: Today we will learn about the properties of exponentns

Review what is a base and exponent
Review Order of Operations

Give formulas and examples for each: (There are both variable and numeric questions)

**Product of Powers** (a^m*a^n)=a^(m+n) (Go over same base idea)
(2^2*2^4)=2^(2+4)=2^6 =64
**Power of a power** (a^m)^n= a^(m*n)
**Power of a product** (am)^n = a^n*m^n

Make sure these are understand these before moving on. Use examples

3^3 * 3^2 * (3^7)^2
(ab)^5 * a^3 * b^4

**Negative Exponent** (Switches where it is in the fraction)
b^-3 1/(a^-3)

**Zero Exponent** a^0 = 1 (Ask what is a^1)

**Quotient of Powers** a^m / a^n = a^(m-n)

**Powers of a quotient (a/b)^n = (a^n/b^n)**

w^-2/w^6 (p^3q^2)^-1

3c^3d/(9cd^-1) (wx^-2)(w^6 x ^-1)

**HW p333 3-10 & 24-31**

Lesson Plans for April 1st to 5th

**Monday:**
Pre-Calc: ( 3rd Long Period)
Do Now: Compute the following: sin(45)*sin(45) + cos(45)*cos(45)
Complete Trig Identity Notes:

$$\sin u = \frac{1}{\csc u} \quad \cos u = \frac{1}{\sec u} \quad \tan u = \frac{1}{\cot u}$$

$$\csc u = \frac{1}{\sin u} \quad \sec u = \frac{1}{\cos u} \quad \cot u = \frac{1}{\tan u}$$

**Pythagorean Identities**

$$\sin^2 u + \cos^2 u = 1 \quad 1 + \tan^2 u = \sec^2 u \quad 1 + \cot^2 u = \csc^2 u$$

**Quotient Identities**

$$\tan u = \frac{\sin u}{\cos u} \quad \cot u = \frac{\cos u}{\sin u}$$

**Co-Function Identities**

$$\sin(\frac{\pi}{2} - u) = \cos u \quad \cos(\frac{\pi}{2} - u) = \sin u \quad \tan(\frac{\pi}{2} - u) = \cot u$$

$$\csc(\frac{\pi}{2} - u) = \sec u \quad \sec(\frac{\pi}{2} - u) = \csc u \quad \cot(\frac{\pi}{2} - u) = \tan u$$

Examples of how to use them:

Review how cancelling works

Algrbra 2:
Do Now : Multiply the two binomials (3x^2 – 7)(2x+8x^3)
Continue notes on multiplying polynomials
Review with simpler examples

Pre Calculus (3rd and 6th)
3/14/13

Objective: How to represent the various characteristics of sine and cosine functions

Do Now: Using your notes plot the sine and cosine curves from x=0 to 2pi

Overview: Today we will learn about the following characteristics in sine and cosine.
Amplitude
Period
Translations

Restate: Standard form  y = a sin(bx- c) + d  " "

Give visual representations for each of these.

**Amplitude abs(a)**

**Period 2pi/b**

**Left and Right endpoints** in Translation (also review vertical translations)

(bx-c = o) left  (bx-c = 2pi) right

Examples to go over in class
¼ cos(2x/3)
½ sin (x – pi/3)
-3(cos (2pix +4pi)

**HW 299 21-24 & 33 – 36**

**Handwritten Lesson Plans:**

Pre-Calc 3rd Monday 3-11-13

Do-Now

Label all the quadrant I angles and their x,y pairs.
(Today you may use notes.)

---

Review
How to use the unit circle with trig functions.
$\sin\left(\frac{\pi}{4}\right)$ $\cos\frac{2\pi}{3}$ $\tan\frac{\pi}{6}$
How to take negative angles
Expectations of how to memorize (talk on signs)
Review of HW

---

How to take the trig value of any function

$r = \sqrt{x^2+y^2} \neq 0$
$\sin(\theta) = y/r$
$\cos(\theta) = x/r$
$\tan(\theta) = y/x$

(Introduce 3 other trig functions
$\sec(\theta) = \frac{1}{\text{cosine}(\theta)}$
$\csc(\theta) = \frac{1}{\sin(\theta)}$
$\cot(\theta) = \frac{1}{\tan(\theta)}$

---

HW 4.4 15-22 (Only sin, cos, tan)

Examples $(\frac{7}{25}, \frac{24}{25})$
$(\frac{5}{13}, -\frac{12}{13})$

Pre-Calc 3/28/13

Do Now: The angle of elevation to the top of a tree for a man standing 200 ft away from a tree is 45°. How tall is the tree?

Check Homework/Attendance

Goals for today:
Complete understanding of trig functions (HW Review)

Begin: Fundamental Identities
Reciprocals
Quotten tan, cot.
Pythagorean
$1 + \tan^2(u) = \sec^2(u)$
$1 + \cot^2(u) = \csc^2(u)$
Cofunction Identities

Algebra 2:

Do Now: Add these two polynomials using like terms properties
$(6x^3 + 2x - 14) + (8x^5 - x^4 - x^3 + 3x^2 + 8)$

~~Vertical~~ Check Homework/Attendance)

Goals for today
+ Present adding and subtracting horizontally/Begin Multiplication
$3x^2 + 2x^2 - x + 7$ from $8x^3 - x^2 - 5x + 1$

$-2y^2 + 3y - 12$
$y - 2$

$(w^2 + 4w - 11)$
$(w + 4)$

Multiplying binomials
Horizontally

Look

Pre-Calc 4/7/13

Do Now, Check HW on trig function simplifications

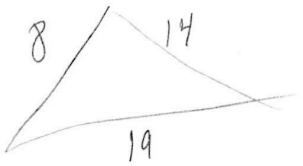
Review Law of Sines - SAA ASA SSSX
- SAS SAA
SAS

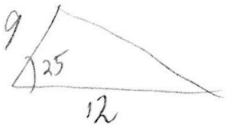
Law of Cosines

$a^2 = b^2 + c^2 - 2bc \cdot \cos(A)$

$b^2 = a^2 + c^2 - 2ac \cos(B)$

$c^2 = a^2 + b^2 - 2ab \cos(C)$




HW: p. 410 13-18
p. 417 13-18 word problem Ex 7 in Book

Algebra 2:

Do Now, Check HW

Review counting principle and number of permutations

Permutations of n objects taken r at a time:

12 songs burn 4 $nP_r = \frac{n!}{(n-r)!}$

Spanish Club
President, VP, Sec (4)

5 kids on a line
20 all together.

Permutations with repetition

EYE $\frac{n!}{s_1! \cdot s_2! \cdots s_k!}$

MIAMI

Music store - 3 guitars
2 keyboards
3 violins

## Sample Assessments

The following assessments are samples of actual used tests and quizzes in the classroom. First are sample assessments from Algebra 2 followed by assessments from Pre-Calculus.

Algebra 2 was assessed on everything quadratics from factoring, to graphing to the quadratic formula. Once we finished that unit we began working on the counting principle.

The main unit that the Pre-Calculus class focused on was trigonometry.

Name:_____ Date:_____

## Algebra II : Polynomial Operations

1. "Like Terms" have the same _____ and _____.
2. Any number divided by itself equals _____.
3. $(4x^4+2x^3-7)+(x^3-x^2+18)$

4. $(y^2-8) + (x^2+ 6x – 4)$

5. $(x^7+3x^2-12) – (x^5-x^3+8)$

6. $(x^3+21x^2+x-12) – (x^4-10x^2+8)$

7. $(x^3+7)(2-x)$

8. $(x^3 - 2x + 8)(x - 2)$

9. $(x^3 + 8x + 12)(x^5 - 5x^2 - x)$

10. $(x^7 + 5x^3 + x^2 - 2x + 6)(3x^3 - 2x + 4)$

Blake Bonus: Why are hearts on the street signs in Worcester?

Name:_____ Date:_____

## Algebra II : Introduction to Factoring

11. Write out what F.O.I.L. means. (10 points)

Using the F.O.I.L. method multiply the two binomials (10 Points Each)

12. (3x+7) (x-2)

13. (x-4) (x+8)

Factor the following trinomials into binomial form. (10 Points Each)

$x^2 + 6x + 5$

$x^2 - 11x + 24$

$x^2 + x - 20$

$x^2 - 8x + 7$

$x^2 - 11x + 30$

$a^2 + 9a + 20$

$s^2 + 2s - 35$

Bonus: $3x^2 + 11x + 10$

Name:_____ Date:_____

## Algebra II : Advanced Factoring Quiz

Each Question is Worth 10 points

Part 1: Rewrite the equation after taking out the greatest common factor.

$9x^3 - 3x^2 + 6x$

$8x^2 - 12x + 2$

$-10x^2 + 15x - 20$

$x^3 - x$

Part 2: Factor completely

$3x^2 + 11x + 10$

$x^2 - 7x + 12$

$x^2 - 9$

$4x^2 - 19x + 12$

(Hint on last 2 questions: take out the GCF then factor)

$-6x^2 - x + 2$ $6x^2 - 15x - 36$

Blake Bonus #1: What college does Mr. Blake attend?

Blake Bonus #2: The late Hugo Chavez was president of what South American country?

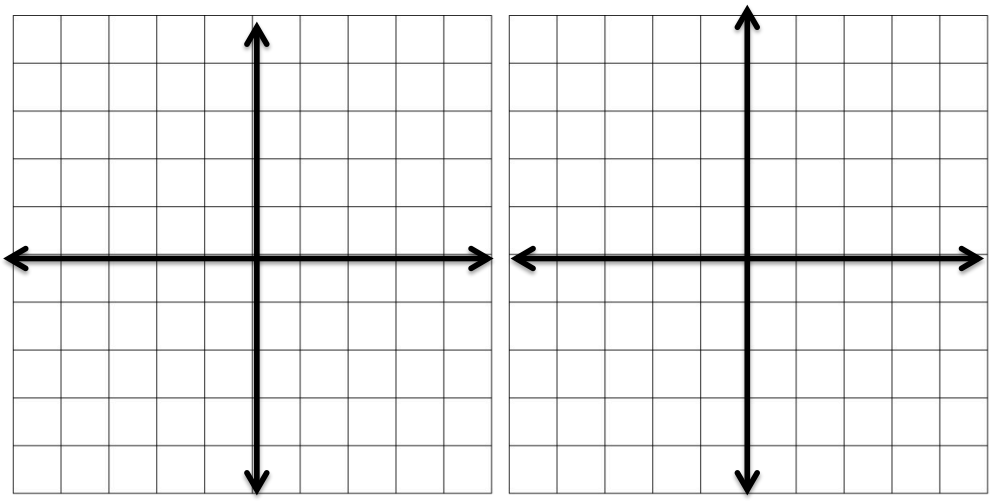
Mr. Blake / Ms. Razzaq
Form **A**

Name:_____ Date:_____

**Quadratics Test**

Each Question is Worth 10 points, show your work and circle your answer when appropriate.

**Graph the two parabolas with x-intercepts labeled and at least one other point.**



$y = x^2 - 5x - 12$

$y = -x^2 + 1$

**Rewrite the Equation after taking out the greatest common factor.**

$-10x^3 + 15x^2 - 20x$

$3x^4 - 6x^2$

Mr. Blake / Ms. Razzaq
Form **A**

**Factoring (Easy Case) : Put each expression into factored form.**

$x^2 + 9x + 36$ $x^2 - 144$

**Factoring (Hard Case) : Put each expression in standard form**

$3x^2 + 20x - 7$ $5x^2 - 17x + 6$

**Quadratic Formula: Find the x-intercepts of the expression using the quadratic formula.**

$2x^2 - 7x - 15$ $2x^2 + 8x - 42$

Blake Bonus: Who was this school named after? (Need more than a last name)

Mr. Blake / Ms. Razzaq

Name:_____ Date:_____

**Algebra II : The Counting Principle**

1. If I have 5 different color markers, how many ways can I put them in order? For Example two orderings could be:

Red-Blue-Green-Yellow-Orange

Yellow-Blue-Orange-Red Green

2. A store sells skateboards of many varieties. The skateboards are either long or short and they are either wide or thin. They also come in one of three colors (Red Blue or Green). Draw a tree diagram that shows all the different options and then tell me how many different types are available.

3. A license plate is 6 characters long in Maine. It starts with any two numbers followed by any 3 letters and then ends with either a 3 or a 7. How many different available license plates are there?

4. How many different ways can the letters in MIAMI be put in order?

5. I am making a playlist of 5 songs. I have 15 to choose from but only 5 can be on the playlist? How many different orderings of playlists are available?

6. Consider the 23 people in this class. If you were to line everyone up (including yourself), how many different ways could you put everyone in order?

Blake Bonus: Name as many of the 7 hills of Worcester that you can.

Name:_____ Date:_____

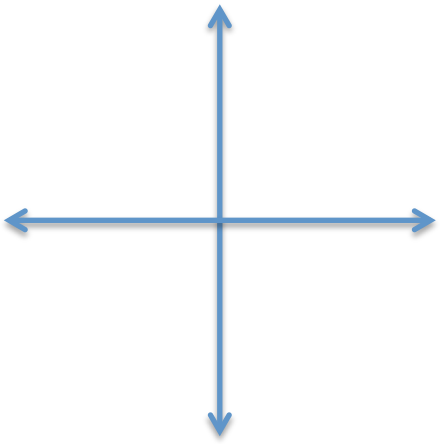
# Pre-Calculus Quiz : Introduction to Trigonometry

Section 1: Fill in the Blanks (20 points)

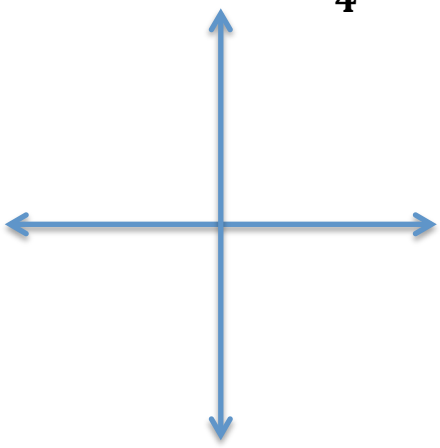
1. Trigonometry is the _____ of _____.
2. Conterminal angles have the same _____ and _____ sides.

Section 2: Sketch the following angles in standard position and label what quadrant they are in. (30 points)

3. $210°$

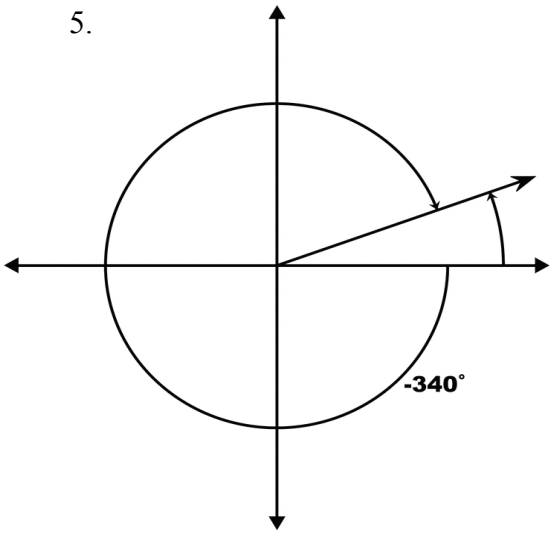


4. $\frac{-5\pi}{4}$

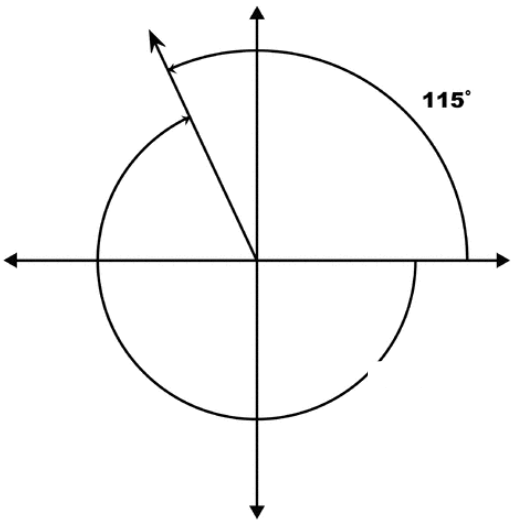


Section 3: Draw and label the conterminal angle of the given angle. (30 points)

5.




6.



Section 4 :Convert (20 points)

7. Convert $270°$ to radians

8. Convert $\frac{-5\pi}{4}$ **radians to degrees**

**Bonus: How many degrees are in a straight angle?**

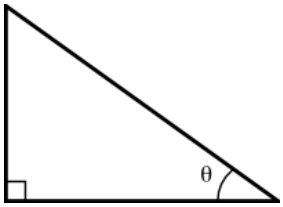
Name:_____ Date:_____

## Pre-Calculus Quiz : SOCAHTOA & Trigonometry Formula

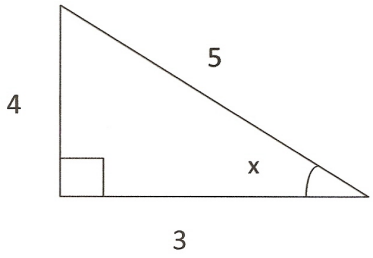
Each Question is worth 10 points

1. What does each letter in S.O.H.C.A.H.T.O.A. mean?

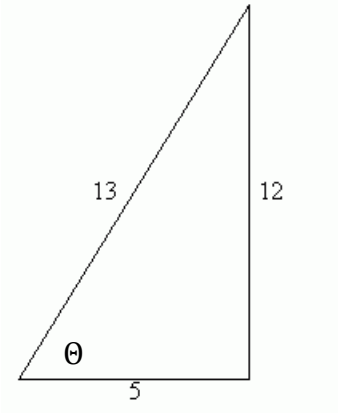
2. Label the hypotenuse, adjacent side and opposite side of the right triangle with respect to theta.




3. Find the sine of x below:




4. Find the cosine of theta below:



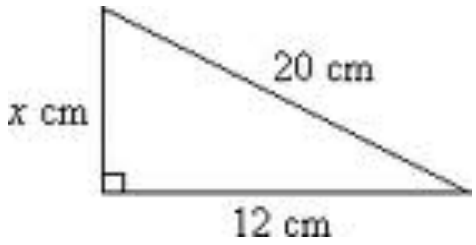
5. If the tan(x) = $\frac{5}{3}$ and the side opposite of angle x is length 5, how long is the adjacent side?

6. If a skip-it toy moves in a full circle ($2\pi$ radians) in 0.5 seconds, what is it's angular speed?

7.The end of the second hand of a clock travels 18cm in 6 seconds, what is its linear speed?

8. What is the central angle of a circle with an arc length of 7cm and a radius of 2 cm?

9. What is the value of x?




10. What was the most difficult part of this quiz?

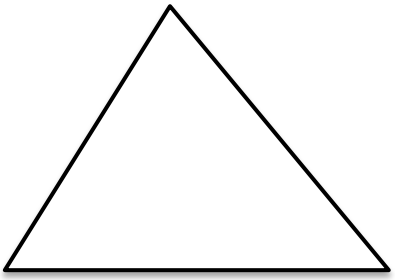
Blake Bonus #1 What college does Mr. Blake attend?

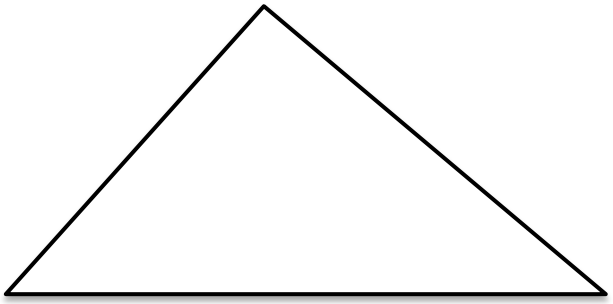
Blake Bonus #2 The late Hugo Chavez was president of what country?

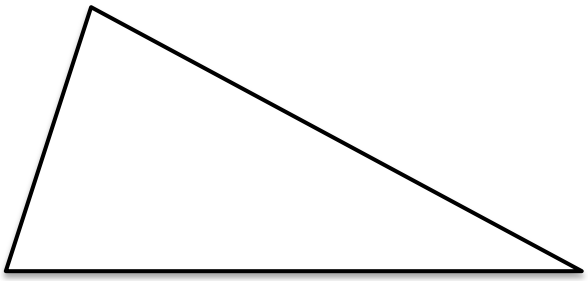
Name:_____ Date:_____

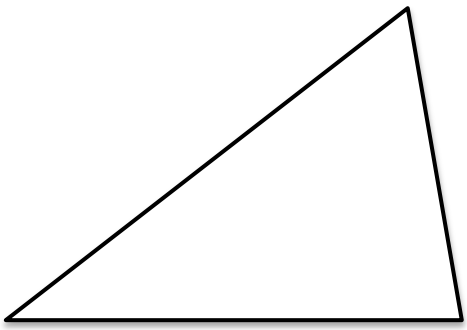
## Pre-Calculus Quiz : Law of Sines and Cosines

Solve the triangle completely by providing all the side lengths and angle measure, no units are required for this quiz. Show work to receive credit.









**Simplify the Trig Expression:**

$$1 - \frac{1}{\sin x} * \frac{1}{\sin x}$$

Blake Bonus: Name as many of the 7 hills of Worcester that you can.

Name:_____ Date:_____

## Pre-Calculus Quiz : Trig Inverses and Applications

1. The side between the 90 degree angle and a 30 degree angle is 6 yards long. Draw the triangle and give the missing angles and sides.

2. A right triangle has a hypotenuse of length 25 feet and the one of its leg sides is of length 16. What are the remaining lengths of the triangle?

3. (T/F) If you know the measures of all the angles in a triangle then you can always calculate the length of all the sides.

4. What is a trigonometric identity?

5. A robot who is 3 feet tall is trying to throw a Frisbee at a target. The bottom of the post the target is on is 18 feet away from the robot (along flat ground). If the target is 30 feet in the air, at what angle of elevation and how far does the robot have to throw the frisbee to get it to hit the target? Assume the robot throws the Frisbee from the top of its height (5 feet).

Given 2 trigonometric values of x, find the other four if possible.

6. $\sin(x) = \frac{1}{2}$ $\cos(x) = \frac{\sqrt{3}}{2}$

7. $\sec(x) = \frac{-17}{15}$ $\sin(x) = \frac{8}{17}$

Blake Bonus: Why are hearts on the street signs of Worcester?

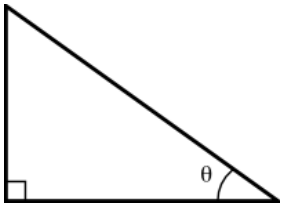
Name:_____ Date:_____

## Pre-Calculus Quiz : SOCAHTOA & Trigonometry Formula

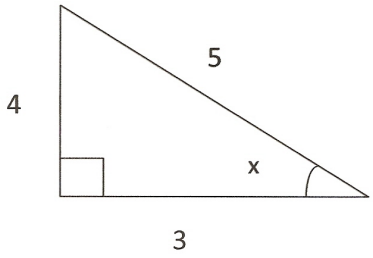
Each Question is worth 10 points

7. What does each letter in S.O.H.C.A.H.T.O.A. mean?

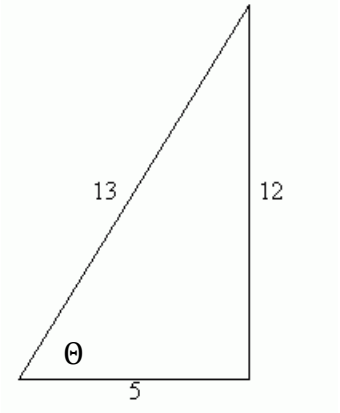
8. Label the hypotenuse, adjacent side and opposite side of the right triangle with respect to theta.




9. Find the sine of x below:




10. Find the cosine of theta below:



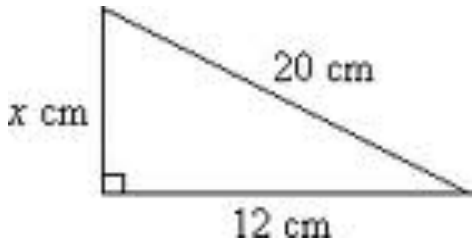
11. If the tan(x) = $\frac{5}{3}$ and the side opposite of angle x is length 5, how long is the adjacent side?

12. If a skip-it toy moves in a full circle ($2\pi$ radians) in 0.5 seconds, what is it's angular speed?

7.The end of the second hand of a clock travels 18cm in 6 seconds, what is its linear speed?

8. What is the central angle of a circle with an arc length of 7cm and a radius of 2 cm?

9. What is the value of x?




10. What was the most difficult part of this quiz?

Blake Bonus #1 What college does Mr. Blake attend?

Blake Bonus #2 The late Hugo Chavez was president of what country?

Name:_____ Date:_____

# Trigonometry Test

Each Question is worth 10 points, remember to show work and label with units.

1-2 Find the values of the 6 trigonometric functions with the central angle formed from the given point in standard form. Leave answer in fraction form.

(8, 15) (7, 24)

3. What is the arc length of a full circle with a radius of 3 yards?

4-5 Give a coterminal angle of the angle provided.

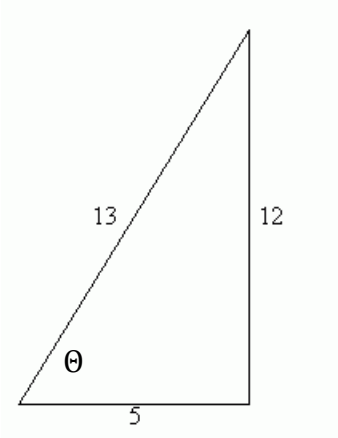
-30° $\frac{5\pi}{4}$

6-7 Sketch the given angles from 4 & 5 in standard form.

8. What is the angular velocity of an object that moves 60° in 4 seconds? Remember to convert from degrees to radians here.

9. In which quadrant of the unit circle is the sine of an angle positive? What about cosine?

10. Find the sine cosine and tangent of theta below:




Blake Bonus: Who was this school named after? (More than a last name is needed)

## Teaching Tools

Below is an example of a math game we played with my Algebra 2 students called MATHO to help teach properties of exponents. As you can see the setup is very similar to that of bingo. Also attached is a sample of the radian to angle convertor tools that my students in pre-calculus were given.

| M<br>Multiplying Rule | A<br>Dividing Rule | T<br>Power of a Power Rule | H<br>Two Rules | O<br>Evaluate |
|---|---|---|---|---|
| $2^7$ | $2^7$ | $2^6$ | $2^7$ | 4 |
| $3^8$ | $3^8$ | $3^8$ | $3^{11}$ | 27 |
| $4^9$ | $4^9$ | $4^{12}$ | $4^9$ | 64 |
| $2^5$ | $2^5$ | $2^{15}$ | $2^9$ | 16 |
| $3^6$ | $3^6$ | $3^{12}$ | $3^7$ | 81 |
| $4^7$ | $4^7$ | $4^8$ | $4^7$ | 128 |
| $2^3$ | $2^3$ | $2^{14}$ | 2 | 32 |
| $3^4$ | $3^4$ | $3^{16}$ | $3^{18}$ | 9 |
| $4^5$ | $4^5$ | $4^{20}$ | $4^{10}$ | 1 |

| M | A | T | H | O |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| M | A | T | H | O |
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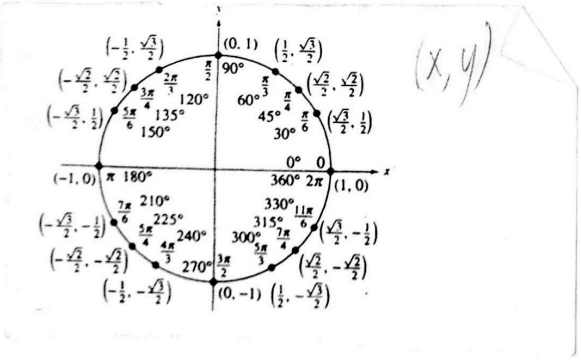

## Miscellaneous

Attached is the write up discussed in Chapter 4

**WORCESTER PUBLIC SCHOOLS**

**TEACHER REFERRAL FORM**

**Student:** Jack Gallagher **Referring Staff:** Mr. Blake (Razzaq (student teacher))

**Student ID:** ____ **Grade Level:** 11 **Homeroom:** ____ **Date:** 3/15/13 **Time of Incident: (hour & minute)** 10:00

**Location:** (select one)

- ☑ Classroom
- ☐ Playground
- ☐ Commons/common area
- ☐ Hallway/Breezeway
- ☐ Cafeteria
- ☐ Bathroom/Restroom
- ☐ Gym
- ☐ Library
- ☐ Bus loading zone
- ☐ Parking lot
- ☐ On bus
- ☐ Special assembly/field trip
- ☐ Lab
- ☐ Shop
- ☐ School Office
- ☐ Other _____

**Nature of problem:** Class was instructed to focus on the assignment and stop talking. Jack refused to follow directions and individually asked to stop. He continued to defy instructions by talking while the teacher was ~~was~~ explaining a task. He was asked to move his seat, he refused again. He was then asked to leave.

**Possible Motivation:** (select one)

- ☑ Obtain peer attention
- ☐ Obtain adult attention
- ☐ Obtain items/activities
- ☑ Avoid tasks/activities
- ☐ Avoid peer(s)
- ☐ Avoid adults
- ☐ Don't Know
- ☐ Other _____

**Others Involved:** (select all that apply)

☐ None ☐ Peers ☐ Staff ☑ Teacher ☐ Substitute ☐ Unknown ☐ Other _____

| Actions of Teacher | Before Referral | Classroom Accommodations |
|---|---|---|
| ☑ Conference with pupil | ☐ SST Referral | ☐ Time out |
| ☐ Phone call home | ☑ Detention | ☐ Mediation |
| ☑ Letter to parents | ☐ Parent Conference | ☑ Change seat |
| ☐ Loss of privilege | ☐ Guidance Conference | ☑ Teacher proximity |
| | ☐ Other | ☐ Behavior chart/Incentive plan |

**Administrative Decision** (circle)

**001** Phone Conference
**002** Notice to Parent
**003** Warning/Time in Office
**004** Demerit/Loss of Privilege
**005** Detention
**05S** Non-Pupil Session Detention
**006** Project 2nd Chance
**007** Overnight PPC
**008** In-School Suspension
**009** Out-of-School Suspension
**010** Bus Suspension
**011** Probation
**012** Referred to Guidance/SS
**013** Removal of Demerit
**014** Conference w/student
**016** Safety Center
**017** Mediation/Conflict Management
**020** Smoking Cessation Program
**Action Code** _____
**Infraction Code** _____
(See Back)

**Follow-up comments:** _____

**Administrator's Initials** _____

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